**Which pH?**

A student finds the pH of 6 different solutions. The results are shown below.

|  |  |
| --- | --- |
| **Solution** | **pH** |
| A | 1 |
| B | 4 |
| C | 6 |
| D | 8 |
| E | 10 |
| F | 12 |

1. Write down the letter of the solution that matches each statement below.
   1. A solution that is more acidic than B.
   2. A solution that is more alkaline than E.
   3. The least acidic solution.
   4. The least alkaline solution.

*Chemistry > Big idea CSU: Substances and properties > Topic CSU3: Acids and alkalis > Key concept CSU3.1: pH scale*

|  |
| --- |
| **Response activity** |
| **Which pH?** |

**Overview**

|  |  |
| --- | --- |
| Learning focus: | Acidic and alkaline solutions may be compared using the pH scale. |
| Observable learning outcome: | Interpret the pH scale. |
| Question type: | application and practice |
| Key words: | acid, alkali, pH scale |

This activity can help develop students’ understanding by addressing the misunderstandings revealed by the following diagnostic question:

* pH scale

**What does the research say?**

Cros et al (1986) and Sheppard (2006) found that some students thought that pH was a measure of acidity. These students did not consider alkalinity at all.

**Ways to use this activity**

This activity gives students the opportunity to practise applying their understanding and to clarify their thinking through discussion. To support this, students should answer the question in pairs or small groups.

Listening to individual groups as they work often highlights any difficulties they might have. These can often be overcome, through a whole class clarification or redirection part way through the activity.

Asking students to share their answer is a useful check. After a group has fed back, it might be helpful to model an even better answer. You could do this, for example, by asking another group to add to, or clarify, the first observation. Then ask another group to sum up the important part of the observation, and so on.

*Differentiation*

If some students are working with a teaching assistant, then a list of prompt questions for the TA could help to make this activity more purposeful.

**Expected answers**

1a A, b F, c C and d D

**Acknowledgments**

Developed by Helen Harden (UYSEG).

Images: None

**References**

Cros, D. et al. (1986). Conceptions of first-year university students of the constituents of matter and the motions of acids and bases. *European Journal of Science Education,* 8(3)**,** 305-313.

Sheppard, K. (2006). High school students' understanding of titrations and related acid-base phenomena. *Chemistry Education Research and Practice,* 7(1)**,** 32-45.